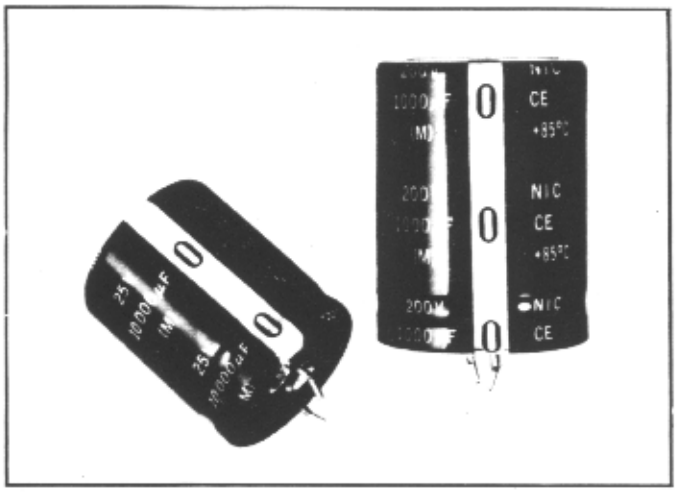
Large Can Aluminum Electrolytic Capacitors NRLM Series

LEADED

FEATURES

- NEW SIZES FOR LOW PROFILE AND HIGH DENSITY DESIGN OPTIONS
- EXPANDED CV VALUE RANGE
- HIGH RIPPLE CURRENT
- LONG LIFE
- CAN-TOP SAFETY VENT
- DESIGNED AS INPUT FILTER OF SWITCHED MODE POWER SUPPLY
- STANDARD 10mm (.400") SNAP-IN SPACING



SPECIFICATIONS

Operating Temperature Range	−40 - +85°C	−25 - +85°C
Rated Working Voltage Range	16 - 250Vdc	315 - 450Vdc
Rated Capacitance Range	180 - 68,000μF	56 - 820μF
Capacitance Tolerance	±20% (M) at 120Hz, +20°C	
Max. Leakage Current After 5 minutes (20°C)	0.02CV (μA) or 3mA whichever is smaller	

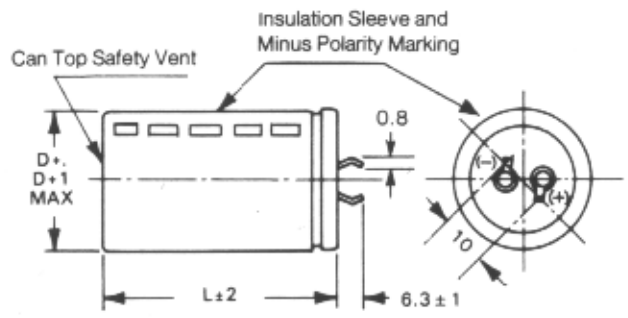
Dissipation Factor (Tan δ)	W.V. (Vdc)	16	25	35	50	63	80	100	160 ~ 450
	Tan δ max.	0.50	0.40	0.35	0.30	0.25	0.20	0.20	0.15
Surge Voltage	W.V. (Vdc)	10	16	25	35	50	63	80	100
	S.V. (Vdc)	13	20	32	44	63	79	100	125
	W.V. (Vdc)	160	180	200	250	315	350	400	450
	S.V. (Vdc)	200	220	250	300	365	400	450	500

Multiplier: Ripple Current vs. Frequency at 85°C	As specified in products table individually. For other frequency, use the following multiplier:							
	Frequency (Hz)	50	60	100	120	500	1K	10K~50K
	Multiplier	0.75	0.8	0.95	1.0	1.05	1.08	1.15

Low Temperature Stability	Temperature	0°C	−25°C / −40°C
	Capacitance Decrease	10%	30% / 60%
	Impedance Ratio	1.5	3 / 12

Load Life Test 2,000 hours at 85°C	Capacitance Change	Within ±20% of initial measured value
	Tan δ & ESR	Less than 200% of the specified maximum value
	Leakage Current	Less than the specified maximum value
Shelf Life Test without load 1,000 hours at 85°C	Capacitance Change	Within ±20% of the initial measured value
	Tan δ & ESR	Less than 200% of the specified maximum value
	Leakage Current	Less than the specified maximum value
Surge Voltage Test 1,000 cycles of 0.5'−On & 4.5'−OFF at 25°C	Capacitance Change	Within ±20% of the initial measured value
	Tan δ & ESR	Less than 200% of the specified maximum value
	Leakage Current	Less than the specified maximum value
Soldering Effect MIL-STD-202F Method 210A	Capacitance Change	Within ±10% of the initial measured value
	Tan δ & ESR	Less than the specified maximum value
	Leakage Current	Less than the specified maximum value

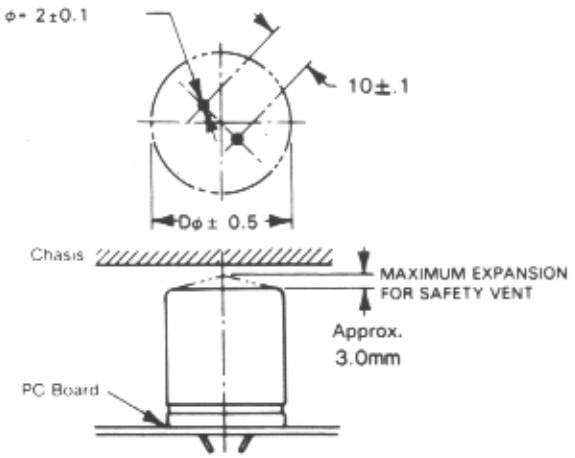
P/N
115351
115377
115406
115422
115431
115449



Notice for Mounting.

The space from the top of the can shall be more than (3mm) from chasis or other construction materials so that safety vent has room to expand in case of emergency

Recommended PC Board Mounting Holes:



Large Can Aluminum Electrolytic Capacitors

NRLM Series

LEADED

STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

W.V. (Vdc)	CAP. (µF)	CASE SIZE D x L (mm)	Max. ESR (Ω) 20°C, 120Hz	Max. Ripple Current (Arms/85°C, 120 Hz)
16	6800	20 x 25	0.121	3.15
	8200	20 x 30	0.101	3.47
	10,000	22 x 30 25 x 25	0.082	3.78
	15,000	22 x 35 25 x 30	0.055	5.26
	22,000	25 x 35 30 x 30	0.037	6.10
	33,000	25 x 50 30 x 40 35 x 30	0.025	6.84
	47,000	30 x 50 35 x 40	0.017	7.47
	68,000	35 x 50	0.012	9.05

W.V. (Vdc)	CAP. (µF)	CASE SIZE D x L (mm)	Max. ESR (Ω) 20°C, 120Hz	Max. Ripple Current (Arms/85°C, 120 Hz)
25	4700	20 x 25	0.141	3.05
	6800	22 x 30 25 x 25	0.097	3.47
	8200	22 x 30 25 x 25	0.080	3.57
	10,000	25 x 30 30 x 25	0.066	3.78
	15,000	25 x 40 30 x 30	0.044	4.63
	22,000	25 x 50 30 x 40	0.030	6.10
	33,000	30 x 50 35 x 40	0.020	6.84
	47,000	35 x 50	0.014	8.00

W.V. (Vdc)	CAP. (µF)	CASE SIZE D x L (mm)	Max. ESR (Ω) 20°C, 120Hz	Max. Ripple Current (Arms/85°C, 120 Hz)
35	3300	20 x 25	0.175	2.73
	4700	22 x 30 25 x 25	0.123	3.26
	6800	22 x 35 25 x 30	0.085	3.68
	8200	25 x 35	0.070	4.00
	10,000	25 x 40 30 x 30 35 x 25	0.058	4.42
	15,000	25 x 50 30 x 40 35 x 30	0.038	5.57
	22,000	30 x 50 35 x 40	0.026	6.10
	33,000	35 x 50	0.017	7.15

W.V. (Vdc)	CAP. (µF)	CASE SIZE D x L (mm)	Max. ESR (Ω) 20°C, 120Hz	Max. Ripple Current (Arms/85°C, 120 Hz)
50	2200	20 x 25	0.226	2.26
	3300	22 x 30 25 x 25	0.150	2.73
	4700	25 x 30 30 x 25	0.105	3.03
	6800	25 x 40 30 x 30	0.073	3.85
	8200	25 x 45 30 x 35	0.060	4.41
	10,000	25 x 50 30 x 40 35 x 30	0.049	4.97
	15,000	30 x 50 35 x 40	0.033	6.44
	22,000	35 x 50	0.022	7.57

W.V. (Vdc)	CAP. (µF)	CASE SIZE D x L (mm)	Max. ESR (Ω) 20°C, 120Hz	Max. Ripple Current (Arms/85°C, 120 Hz)
63	2200	22 x 30 25 x 25	0.188	2.52
	3300	25 x 30 30 x 25	0.125	4.10
	4700	25 x 40 30 x 30 35 x 25	0.088	4.86
	6800	25 x 50 30 x 40 35 x 30	0.060	5.84
	8200	30 x 45 35 x 35	0.050	6.00
	10,000	35 x 40	0.041	6.52

W.V. (Vdc)	CAP. (µF)	CASE SIZE D x L (mm)	Max. ESR (Ω) 20°C, 120Hz	Max. Ripple Current (Arms/85°C, 120 Hz)
80	1500	22 x 30 25 x 25	0.221	2.26
	2200	25 x 30 30 x 25	0.150	2.73
	3300	25 x 40 30 x 30	0.100	3.21
	4700	25 x 50 30 x 40	0.070	4.09
	6800	30 x 50 35 x 40	0.048	5.16
	8200	35 x 50	0.040	5.83

STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

LEADED

W.V. (Vdc)	CAP. (µF)	CASE SIZE D x L (mm)	Max. ESR (Ω) 20°C, 120Hz	Max. Ripple Current (Arms/85°C, 120 Hz)
100	1000	22 x 30 25 x 25	0.331	1.96
	1500	25 x 30 30 x 25	0.221	5.57
	2200	25 x 40 30 x 30	0.150	3.14
	3300	25 x 50 30 x 40	0.100	4.06
	4700	30 x 50 35 x 40	0.070	5.13
	6800	35 x 50	0.048	6.60

W.V. (Vdc)	CAP. (µF)	CASE SIZE D x L (mm)	Max. ESR (Ω) 20°C, 120Hz	Max. Ripple Current (Arms/85°C, 120 Hz)
200	220	22 x 25 25 x 25	1.130	1.20
	330	22 x 30 25 x 25	0.753	1.56
	470	25 x 30 30 x 25	0.529	1.85
	680	25 x 35 30 x 30	0.365	2.68
	820	25 x 45 30 x 35 35 x 25	0.303	2.93
	1000	25 x 50 30 x 40 35 x 30	0.248	3.25
	1500	30 x 50 35 x 40	0.165	3.87
	2200	35 x 50	0.113	4.92

W.V. (Vdc)	CAP. (µF)	CASE SIZE D x L (mm)	Max. ESR (Ω) 20°C, 120Hz	Max. Ripple Current (Arms/85°C, 120 Hz)
315	100	22 x 25	2.486	0.92
	220	25 x 35 30 x 25	1.130	1.41
	330	25 x 45 30 x 35 35 x 25	0.753	1.82
	470	30 x 40 35 x 35	0.529	2.27
	680	35 x 45	0.450	2.87
	820	35 x 50	0.40	3.25

W.V. (Vdc)	CAP. (µF)	CASE SIZE D x L (mm)	Max. ESR (Ω) 20°C, 120Hz	Max. Ripple Current (Arms/85°C, 120 Hz)
400	68	22 x 25	3.657	0.76
	82	22 x 25	3.032	0.83
	100	22 x 30 22 x 25	2.486	0.92
	220	25 x 40 30 x 30	1.130	1.49
	330	30 x 40 35 x 35	0.753	1.90
	470	35 x 45	0.529	2.39

W.V. (Vdc)	CAP. (µF)	CASE SIZE D x L (mm)	Max. ESR (Ω) 20°C, 120Hz	Max. Ripple Current (Arms/85°C, 120 Hz)
160	330	22 x 25	0.753	1.45
	470	22 x 30 25 x 25	0.529	2.11
	680	25 x 35 30 x 25	0.365	2.50
	820	25 x 35 30 x 30	0.303	2.75
	1000	25 x 45 30 x 35 35 x 30	0.248	3.00
	1500	30 x 45 35 x 35	0.165	3.73
	2200	35 x 45	0.113	4.78

W.V. (Vdc)	CAP. (µF)	CASE SIZE D x L (mm)	Max. ESR (Ω) 20°C, 120Hz	Max. Ripple Current (Arms/85°C, 120 Hz)
250	220	22 x 30 25 x 25	1.13	1.17
	330	25 x 30 30 x 25	0.753	1.75
	470	25 x 40 30 x 30	0.529	2.11
	680	25 x 50 30 x 40 35 x 30	0.365	2.50
	820	30 x 45 35 x 35	0.303	2.77
	1000	30 x 50 35 x 40	0.248	3.32
	1500	35 x 50	0.165	4.04

W.V. (Vdc)	CAP. (µF)	CASE SIZE D x L (mm)	Max. ESR (Ω) 20°C, 120Hz	Max. Ripple Current (Arms/85°C, 120 Hz)
350	100	22 x 25	2.65	0.91
	220	25 x 40 30 x 30 35 x 25	1.21	1.44
	330	25 x 50 30 x 40 35 x 30	0.80	1.88
	470	30 x 50 35 x 40	0.65	2.40
	680	35 x 50	0.55	2.96

W.V. (Vdc)	CAP. (µF)	CASE SIZE D x L (mm)	Max. ESR (Ω) 20°C, 120Hz	Max. Ripple Current (Arms/85°C, 120 Hz)
450	47	22 x 25	5.650	0.37
	68	22 x 30	3.657	0.76
	82	22 x 30 25 x 25	3.032	0.83
	100	25 x 30 30 x 25	2.486	0.93
	220	25 x 50 30 x 40 35 x 30	1.130	1.55
	330	30 x 50 35 x 40	0.753	2.01
	470	35 x 50	0.529	2.53